

Sequence Listing

SEQ ID
1 rat OGFr cDNA
5 2 rat OGFr protein
3 rat OGFr cDNA partial (clone 14)
4 human OGFr cDNA (Provisional)
5 human OGFr splice version 8, cDNA
6 human OGFr splice version 8, protein
10 7 human OGFr splice version 1, cDNA
8 human OGFr splice version 1, protein
9 human OGFr splice version 4, cDNA
10 human OGFr splice version 4, protein
11 human OGFr splice version 7, cDNA
12 human OGFr splice version 7, protein
13 human OGFr splice version 127, cDNA
14 human OGFr splice version 127, protein
15 rat OGFr antisense 5'-GACTCAGGGACTTAGCTTCATCC-3'
16 scrambled 5'-ATAGATACTACGCCGGCTGTCCT-3'
17 human OGFr antisense 5'-GGTCGTCCATGCTCGGCTAGAAT-3'
18 scrambled 5'-GTGCAGTGCAATGCTCTCCGTGA-3'

25

30

SEQ ID NO: 1 -- Rat Opioid Growth Factor Receptor cDNA sequence

TGGGCTCAGCCACGCCCAAGGGTCCCCCAGTGGGACTAGTTCTTCATTCTGGCAGCTGCACACATCTGTCA
5 TGGAGGAGAGCGAGGAGGATGGCGAGGATGGCCAGCGGATGATA
GAGGAGGAGAGCGAGGAGGATGGCGAGGATGGCCAGCGGATGATA
GCACGGCCAAGCCTGTTCCAGTCAGGATGACAGGTACCGAA
GAGTGACAGATCAAGACTGCAATGGGACATGTGCAACCTGAG
10 GAGGACATTCTCAGAACCTGAAAGACA
GGAGTGAACTGGCACGCAAGCCCCTCACCC
15 TATGAGCTCATGCTGGCTCTATGGTCCACCTTGAGGAC
ACAATCTGAACAGCCACAGCCAAACA
CCCCCTGGTCCGCTCTTCTGGAGGAGACC
20 GTGCCTGCCGGCACAGGCCGGAGCTTG
AAGCTGC
25 GGGGGAA
30 AGCCAGGTGGGCTGGAGGACTCAA
GGCCAGAGGACCCAAACAGCCAGGTGGG
GAGGACCTGACTCTGACACTATGG
TAGAGGTGC
35 TAGCCCTCCCTAGGGTCACTGAGG
40 TGGAGGAAAGGGCTGAGGGTGTGGAGTAGTCAGTA
GCCAAAAGGATGGGA
AGCCAGGTGGGCTGGAGGACCCAAACAGCCAGGTGGG
GGCCAGAGGACCCAAACAGCCAGGTGGG
GAGGACCTGACTCTGACACTATGG
TAGAGGTGC
45 TGGAGGAAAGGGCTGAGGGTGTGGAGTAGTCAGTA
GCCAAAGTGA
50 Initiator AUG at 151-153
Terminator TAG at 1891-1983
Open reading frame 151 (AUGGACGAC...) to 1890 (... AAGCCT)

SEQ ID NO: 2 -- Rat Opioid Growth Factor Receptor

35 1 MDDPDCDSTW EEESEEDGED GQADDTDED TGDDDGDAEE ARPSLFQSRM
51 51 TGYRNWRAMQ DMQRYRHNYP DLTDQDCNGD MCNLSFYKNE ICFQPN
101 101 EDILQNWKDN YDLLEENHSY IQWLFLREP GVNW
151 151 KEVRERLVRA YELMLGFYGF HLEDRGTGAV CRAQNFQPRF HNLNSHSHNN
201 201 LRITRILKSL GELGLEHYQA PLVRF
59

251 VRCRHRREL VYFAWEHFKP RREFVWGP RD KLRRFKPQTI PQPLTGPQ A
301 DKDEGSRDPS QEAGTQGR TC GSGRDLSGDS GTAEDPSLLN TKPSDGGTL D
351 GNQRDEAKSL SPKESKKRKL EGNRQE QVPG EADPQGVSEV EKIALNLEEC
401 ALSPSISQEP PR EAEP PCPVAR VANEVRKRRK VEEGAEGDGV VSNTQM QASA
5 451 LPPTPSEC PR AQKDNGNP ED SNSQVGAEDS KSQVGPEDPN SQVGL ED PNS
501 QVG PEDPNS Q VG PEDPNS QVG PEDPNS QVG PEQAASKSPV
551 ED PDSDTMGT SVDESEELAR IEASAEPPKP

10 SEQ ID NO:3 -- Rat OGFr, partial cDNA sequence, clone 14

15 1 CATTGGGCCG ACGTCGCATG CTCCTCTAGA CTCGAGGAAT TCGGGCCCCA
51 GGGTGTCTCT GAGGTAGAGA AAATTGCCCT TAACCTTGAG GAGTGTGCC
101 TTAGCCCTAT CAGCCAGGAG CCCAGGGAGG STGAACCGCC CTGTCCTGTG
151 GCCAGGGTGG CTANAATGAG GTAAGAAANG CGGNAGGAAG GTGGAGGAAG
201 GGGCTGAGGG TGNATGGAGT AGTCAGTAAC ACTYAAATGN CAGGCCAGTG
251 CCCTGCCTCC TACCCCTTCA GAGTGTCTG AGGCCAAAAA GGATGGAAT
301 GGGCCAGAGG ACTCAAACAG CCAGGTTGGG GCAGAGGATT CCAAAAGCCA
351 GGTGGGGCCG GAGGATCCAA ACAGCCAGGT GGGCTGGAG GACCCAAACA
401 GCCAGGT CGG GCCAGAGGAC CCAAACAGCC AGGT CGG GCC AGAGGACCA
451 AACAGCCAGG TCGGGCCAGA GGACCCAAAC AGCCAGGT CGG GCC AGAGGA
501 CCCAAACAGC CAGGTGGTGG GGCCAGAGCA AGCTGCCTCT AAGAGCCCTG
551 TGGANGGACC CTGACTCTGA CACTATGGGA ACCTCAGTGG ATGAGTCAGA
601 GGAGTTGGCA AGGATTGAGG CNTYTGCTGA ACCCCCCAAAG CCTTAGAGGT
651 GCATTTCACT CCTACTCAGC CCACTCAGG GGGTTCTGA GTCCAGAGCT
701 CTGCCGTAGG CTCTTCTTGG TGCCCCACAG TGCTGGCTC TCCCTASTGG
751 TCACTGAGGT GGCCACCAGA GGGACTGAGG CCCTGCCCTC AGGGAAAGGCC
801 AAGGCCCTCA GAACCCTCCT TACCTCACTG TGTCCTCCTC CACTGCCCTC
851 TGAGCCCTGC GTTGTGATCA GACCCCTAAGG GTCTAGAGGG AGGGGCCTCT
901 TCATTAGTCT GGTGCCAAGT GAGGCCCTTT CTGAATAAAC TCTTTAGACT
951 TTGTCAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAA

~~SEQ ID NO:4~~ -- Human OGF receptor cDNA; spliced form A

Length: 2290

1 TAGAATTCAAG CGGCCGCTGA ATTCTAGCCG AGCATGGACG ACCCCGACTG
5 CGACTCCACC TGGGAGGAGG ACGAGGAGGA TGCGGAGGAC GCGGAGGACG
101 AGGACTGCGA GGACGGCGAG GCCGCCGGCG CGAGGGACGC GGACGCAGGG
151 GACGAGGACG AGGAGTCGGA GGAGCCGCGG CGGGCGCGC CCAGCTCGTT
201 CCAGTCCAGA ATGACAGGGT CCAGAAACTG GCGAGCCACG AGGGACATGT
251 GTAGGTATCG GCACAACAT CCGGATCTGG TGGAACGAGA CTGCAATGGG
301 GACACGCCAA ACCTGAGTTT CTACAGAAAT GAGATCCGCT TCCTGCCAA
351 CGGCTGTTTC ATTGAGGACA TTCTTCAGAA CTGGACGGAC AACTATGACC
401 TCCTTGAGGA CAATCACTCC TACATCCAGT GGCTGTTCC TCTGCGAGAA
451 CCAGGAGTGA ACTGGCATGC CAAGCCCCTC ACGCTCAGGG AGGTCGAGGT
501 GTTTAAAAGC TCCCAGGAGA TCCAGGAGCG GCTTGTCCGG GCCTACGAGC
551 TCATGCTGGG CTTCTACGGG ATCCGGCTGG AGGACCGAGG CACGGGCACG
601 GTGGGCCGAG CACAGAACTA CCAGAACGCG TTCCAGAACC TGAACTGGCG
651 CAGCCACAAAC AACCTCCGCA TCACACGCAT CCTCAAGTCG CCGTGTGAGC
701 TGAGCCTCGA GCACTTCCAG GCGCCACTGG TCCGCTTCTT CCTGGAGGAG
751 ACGCTGGTGC GGCGGGAGCT GCCGGGGGTG CGGCAGAGTG CCCTGGACTA
801 CTTCATGTTG GCCGTGCGCT GCCGACACCA GCGCCGCCAG CTGGTGCACT
851 TCGCCTGGGA GCACTTCCGG CCCCAGCTGCA AGTTCTGCTG GGGGCCCAA
901 GACAAGCTGC GGAGGTTCAA GCCCAGCTCT CTGCCCCATC CGCTCGAGGG
951 CTCCAGGAAG GTGGAGGAGG AAGGAAGCCC CGGGGACCCC GACCACGAGG
1001 CCAGCACCCA GGGTCGGACC TGTGGGCCAG AGCATAGCAA GGGTGGGGC
1051 AGGGTGGACG AGGGGCCCCA GCCACGGAGC GTGGAGCCCC AGGATGCGGG
1101 ACCCCTGGAG AGGAGCCAGG GGGATGAGGC AGGGGGCCAC GGGGAAGATA
1151 GGCCGGAGCC CTTAAGCCCC AAAGAGAGCA AGAAGAGGAA GCTGGAGCTG
1201 AGCCGGCGGG AGCAGCCGCC CACAGAGCCA GGCCCTCAGA GTGCCTCAGA
1251 GGTGGAGAAG ATCGCTCTGA ATTTGGAGGG GTGTGCCCTC AGCCAGGGCA
1301 GCCTCAGGAC GGGGACCCAG GAAGTGGCG GTCAGGACCC TGGGGAGGCA
1351 GTGCAGCCCT GCCGCCAACC CCTGGGAGCC AGGGTGGCCG ACAAGGTGAG
1401 GAAGCGGAGG AAGGTGGATG AGGGTGCTCG GGACAGTGCT GCGGTGGCCA
1451 GTGGTGGTGC CCAGACCTTG GCCCTTGCCG GGTCCCCCTGC CCCATCGGGG
1501 CACCCCAAGG CTGGACACAG TGAGAACGGG GTTGAGGAGG ACACAGAAGG
35 1551 TCGAACGGGG CCCAAAGAAG GTACCCCTGG GAGCCCATCG GAGACCCAG

1601 GCCCCAGCCC AGCAGGGACCT GCAGGGGACG AGCCAGCCGA GAGCCCATCG
1651 GAGACCCCGAG GCCCCCGCCC GGCAGGGACCT GCAGGGGACG AGCCAGCCGA
1701 GAGCCCATCG GAGACCCAG GCCCCAGCCC GGCAGGGACCT ACAAGGGATG
1751 AGCCAGCCGA GAGCCCATCG GAGACCCAG GCCCCCGCCC GGCAGGGACCT
5 1801 GCAGGGGACG AGCCAGCCGA GAGCCCATCG GAGACCCAG GCCCCCGCCC
1851 GGCAGGGACCT GCAGGGGACG AGCCAGCCGA GAGCCCATCG GAGACCCAG
1901 GCCCCAGCCC GGCAGGGACCT ACAAGGGATG AGCCAGCCAA GGCGGGGGAG
1951 GCAGCAGAGT TGCAKGACGC AGAGGTGGAG TCTTCTGCCA AGTCTGGAA
2001 GCCTTAAGGA AAGGAGTGCC CGTCGGCGTC TTGGTCCTCC TGTCCCTGCT
10 2051 GCAGGGGCTG GGGCCTCCGG AGCTTGCTGC GGGCTCCCCT CAGGCTCTGC
2101 TTCGTGACCC GTGACCCATG ACCCACAGTG CTGGCCTCCCT GTGGGGCCAC
2151 TATAGCARSC ACCAGAACGCC GCGAGGCCCT CAGGGAAAGCC CAAGGCCTGC
2201 AGAAGCCTCC TGGQCTGGCT GTGTCTTCCC CACCCAGCTC TCCCCTGCGC
2251 CCCTGTCTTT GTAAATTGAC CCTTCTGGAG TGGGGGGCGG

15 Letter "S", "R", or "K" was used in positions where there was a 50-50 split on the consensus sequences. S = C or G; R = A or G; K = T or G.
Initiator AUG 34-36
Terminator TAA 2005-2007
20 Open reading frame: 34 (AUGGACGAC...) to 2004 (...GGGAAGCCT)

25 SEQ ID NO: 5 -- Human Opiod Growth Factor Receptor cDNA, spliced
version 8

30 1 TAGAATTCAAG CGGCCGTGA ATTCTAGCCG AGCATGGACG ACCCCGACTG
51 CGACTCCACC TGGGAGGAGG ACGAGGAGGA TGCAGGAGGAC GCGGAGGACG
101 AGGACTGCGA GGACGGCGAG GCGCCGGCG CGAGGGACGC GGACGCAGGG
151 GACGAGGACG AGGAGTCGGA GGAGCCGGG GCGGCGCGGC CCAGCTCGTT
201 CCAGTCCAGA ATGACAGGGT CCAGAAACTG GCGAGCCACG AGGGACATGT
251 GTAGGTATCG GCACAACAT CCAGGATCTGG TGGAACGAGA CTGCAATGGG
301 GACACGCCAA ACCTGAGTTT CTACAGAAAT GAGATCCGCT TCCTGCCAA
351 CGGCTGTTTC ATTGAGGACA TTCTTCAGAA CTGGACGGAC AACTATGACC

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by
S. A.
C. M.

401 TCC TTGAGGA CAATCACTCC TACATCCAGT GGCTGTTCC TCTGCGAGAA
451 CCAGGAGTGA ACTGGCATGC CAAGCCCCTC ACGCTCAGGG AGGTGAGGT
501 GTTTAAAAGC TCCCAGGAGA TCCAGGAGCG GCTTGTCCGG GCCTACGAGC
551 TCATGCTGGG CTTCTACGGG ATCCGGCTGG AGGACCGAGG CACGGGCACG
5 601 GTGGGCCAG CACAGAACTA CCAGAACGC TTCCAGAACCC TGAACGGCG
651 CAGCCACAAAC AACCTCCGCA TCACACGCAT CCTCAAGTCG CCGTGTGAGC
701 TGAGCCTCGA GCACCTCCAG GCGCCACTGG TCCGCTTCTT CCTGGAGGAG
751 ACGCTGGTGC GGCAGGGAGCT GCGGGGGTG CGCAGAGTG CCCTGGACTA
801 CTTCATGTTC GCCGTGCGCT GCCGACACCA GCGCCGCCAG CTGGTGCACT
10 851 TCGCCTGGGA GCACCTCCGG CCCCGCTGCA AGTCGTCTG GGGGCCCAA
901 GACAAGCTGC GGAGGTTCAA GCCCAGCTCT CTGCCGCATC CGCTCGAGGG
951 CTCCAGGAAG GTGGAGGAGG AAGGAAGCCC CGGGGACCCC GACCACGAGG
1001 CCAGCACCCA GGGTCGGACC TGTGAGCCAG AGCATAGCAA GGGTGGGGC
1051 AGGGTGGACG AGGGGCCCA GCCACGGAGC GTGGAGCCCC AGGATGCGGG
1101 ACCCCTGGAG AGGAGGCAGG GGGATGAGGC AGGGGGCCAC GGGGAAGATA
1151 GGCCGGAGCC CTTAAGCCCC AAAGAGAGCA AGAAGAGGAA GCTGGAGCTG
1201 AGCCGGCGGG AGCAGCCGCC CACAGGGCCA GCCCCTCAGA GTGCCCTCAGA
1251 GGTGGAGAAG ATCGCTCTGA ATTTGGAGGG GTGTGCCCTC AGCCAGGGCA
1301 GCCTCAGGAC GGGGACCCAG GAAGTGGCG GTCAGGACCC TGGGGAGGCA
1351 GTGCAGCCCT GCCGCCAAC CCTGGGAGCC AGGGTGGCCG ACAAGGTGAG
1401 GAAGCGGAGG AAGGTGGATG AGGGTACTGG GGACAGTGCT GCGGTGGCCA
1451 GTGGTGGTGC CCAGACCTTG GCCCTTGGCG GGTCCCCTGC CCCATCGGGG
1501 CACCCCAAGG CTGGACACAG TGAGAACGGG GTTGAGGAGG ACACAGAAGG
1551 TCGAACGGGG CCCAAAGAAG GTACCCCTGG GAGCCCATCG GAGACCCAG
1601 GCCCCAGCCC AGCAGGACCT GCAGGGAGC AGCCAGCCAA GACCCCATCG
1651 GAGACCCAG GCCCCAGCCC GGCAGGACCT ACAAGGGATG AGCCAGCCGA
1701 GAGCCCATCG GAGACCCAG GCCCCCGCCC GGCAGGACCT GCAGGGGACG
1751 AGCCAGCCGA GAGCCCATCG GAGACCCAG GCCCCCGCCC GGCAGGACCT
1801 GCAGGGGACG AGCCAGCCAA GATCCCATCG GAGACCCAG GCCCCAGCCC
30 1851 GGCAGGACCT ACAAGGGATG AGCCAGCCGA GAGCCCATCG GAGACCCAG
1901 GCCCCCGCCC GGCAGGACCT GCAGGGGACG AGCCAGCCGA GAGCCCATCG
1951 GAGACCCAG GCCCCCGCCC GGCAGGACCT GCAGGGGACG AGCCAGCCGA

2001 GAGCCCATCG GAGACCCAG GCCCCAGCCC GGCAGGACCT ACAAGGGATG
2051 AGCCAGCCAA GGCGGGGGAG GCAGCAGAGT TGCAGGACGC AGAGGTGGAG
2101 TCTTCTGCCA AGTCTGGAA GCCTTAAGGA AAGGAGTGCC CGTCGGCGTC
2151 TTGGTCCTCC TGTCCCTGCT GCAGGGCTG GGGCCTCCGG AGCTGCTGCG
5 2201 GGCTCCCCTC AGGCTCTGCT TCGTGACCCG TGACCCATGA CCCACAGTGC
2251 TGGCCTCCTG TGGGGCCACT ATAGCAGCCA CCAGAAGCCG CGAGGCCCTC
2301 AGGGAAGCCC AAGGCCTGCA GAAGCCTCCT GGCCTGGCTG TGTCTTCCCC
2351 ACCCAGCTCT CCCCTGCGCC CCTGTCTTG TAAATTGACC CTTCTGGAGT
2401 GGGGGCG

10

SEQ ID NO: 6 -- Human Opioid Growth Factor Receptor protein, from spliced cDNA version 8

15 MDDPDCDSTWEEDEEDAEDAEDEDCEGEAAGARDADAGDEDEESEEPRAARPSSFQSRM 60
TGSRNWRATRDMCRYRHNPDLVERDCNGDTPNLSFYRNEIRFLPNGCFIEDILQNWTDN 120
YDLLEDNHSYIQWLFPPLREPVGVNWHAKPLTLREVEVFKSSQEIQERLVRAYELMLGFYGI 180
RLEDRGTVGTRAQNYQKRFQNLNRSHNNLRITRILKSPCELSLEHFQAPLVRFFLEET 240
LVRRELPGVRQSALDYFMFAVRCRHQRQLVHFAWEHFRPRCKFWGPQDKLRRFKPSSL 300
20 PHPLEGSRKVEEGSPGDPDHEASTQGRTEPEHSGGGRVDEGPQPRSVEPQDAGPLER 360
SQGDEAGGHGEDRPEPLSPKESKKRKLELSREQPPTGPGPQSASEVEKIALNLEGCALL 420
QGSLRTGTQEVGQDPGEAVQPCRQPLGARVADKVRKRRKVDEGTGDSAAVASGGAQTLA 480
LAGSPAPSGHPKAGHSENGVEEDTEGRTGPKEGTPGSPSETPGPS PAGPAGDEPAKTPSE 540
TPGPSPAGPTRDEPAESPSETPGPRPAGPAGDEPAESPSETPGPRPAGPAGDEPAKIPSE 600
TPGPSPAGPTRDEPAESPSETPGPRPAGPAGDEPAESPSETPGPRPAGPAGDEPAESPSE 660
TPGPSPAGPTRDEPAKAGEAAELQDAEVESSAKSGKP 697
25

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SEQ ID NO: 7 -- Human OGFr cDNA, spliced version 1

30

1 TAGAATTCA CGGCCGCTGA ATTCTAGCCG AGCATGGACG ACCCCGACTG
51 CGACTCCACC TGGGAGGAGG ACGAGGAGGA TGCGGAGGAC GC GGAGGACG

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101 AGGACTGCAGA GGACGGCGAG GCCGCCGGCG CGAGGGACGC GGACGCAGGG
151 GACGAGGACG AGGAGTCGGA GGAGCCGCGG GCAGCGCGGC CCAGCTCGTT
201 CCAGTCCAGA ATGACAGGGT CCAGAAACTG GCGAGCCACG AGGGACATGT
251 GTAGGTATCG GCACAACAT CCGGATCTGG TGGAACGAGA CTGCAATGGG
5 301 GACACGCCAA ACCTGAGTTT CTACAGAAAT GAGATCCGCT TCCTGCCCAA
351 CGGCTGTTTC ATTGAGGACA TTCTTCAGAA CTGGACGGAC AACTATGACC
401 TCCTTGAGGA CAATCACTCC TACATCCAGT GGCTGTTCC TCTGCGAGAA
451 CCAGGAGTGA ACTGGCATGC CAAGCCCCC ACGCTCAGGG AGGTGAGGT
501 GTTTAAAAGC TCCCAGGAGA TCCAGGAGCG GCTTGTCCGG GCCTACGAGC
10 551 TCATGCTGGG CTTCTACGGG ATCCGGCTGG AGGACCGAGG CACGGGCACG
601 GTGGGCCGAG CACAGAACTA CCAGAAGCGC TTCCAGAACCG TGAACTGGCG
651 CAGCCACAAAC AACCTCCGCA TCACACGCAT CCTCAAGTCG CCGTGTGAGC
701 TGAGCCTCGA GCACTTCCAG GCGCCACTGG TCCGCTTCTT CCTGGAGGAG
751 ACGCTGGTGC GGCGGGAGCT GCCGGGGGTG CGGCAGAGTG CCCTGGACTA
15 801 CTTCATGTTC GCCGTGCGCT GCCGACACCA GCGCCGCCAG CTGGTGCACT
851 TCGCCTGGGA GCACTTCCGG CCCCCTGCA AGTCGTCTG GGGGCCCCAA
901 GACAAGCTGC GGAGGTTCAA GCCCAGCTCT CTGCCGCATC CGCTCGAGGG
951 CTCCAGGAAG GTGGAGGAGG AAGGAAGCCC CGGGGACCCC GACCACGAGG
1001 CCAGCACCCA GGGTCGGACC TGTGGGCCAG AGCATAGCAA GGGTGGGGC
20 1051 AGGGTGGACG AGGGGCCCA GCGACGGAGC GTGGAGCCCG AGGATGCAGG
1101 ACCCCTGGAG AGGAGCCAGG GGGATGAGGC AGGGGGCCAC GGGGAAGATA
1151 GGCCGGAGCC CTTAAGCCCC AAAGAGAGCA AGAAGAGGAA GCTGGAGCTG
1201 AGCCGGCGGG AGCAGCCGCC CACAGAGCCA GGCCTCAGA GTGCCTCAGA
1251 GGTGGAGAAG ATCGCTCTGA ATTTGGAGGG GTGTGCCCTC AGCCAGGGCA
1301 GCCTCAGGAC GGGGACCCAG GAAGTGGCG GTCAGGACCC TGGGGAGGCC
1351 TCCTGTCCT GCTGCAGGGG CTGGGGCCCTC CGGAGCTGCT GCGGGCTCCC
1401 CTCAGGCTCT GCTTCGTGAC CCGTGACCCA TGACCCACAG TGCTGGCCTC
1451 CTGTGGGGCC ACTATAGCAG CCACCAGAAG CGCGAGGCC CTCAGGGAAAG
1501 CCCAAGGCCT GCAGGAGCCT CCTGGCCTGG CTGTGTCTTC CCCACCCAGC
30 1551 TCTCCCCTGC GCCCCTGTCT TTGTAAATTG ACCCTCTGG AGTGGGGGGC
1601 G

SEQ ID NO: 8 -- Human Opioid Growth Factor Receptor protein, from spliced cDNA version 1

5 MDDPDCDSTWEEDEDAEDAEDEDCEDGEAAGARDADAGDEDEESEEPRAARPSSFQSRM 60
TGSRNWRATRDMCRYRHNPDLVERDCNGDTPNLSFYRNEIRFLPNGCFIEDILQNWTDN 120
YDLLEDNHSYIQWLFPLREPVGVNWHAKPLTLREVEVFKSSQEIQERLVRAYELMLGFYGI 180
RLEDRGTGTVGRAQNYQKRFQNLNWRSHNNLRITRILKSPCELSLEHFQAPLVFFLEET 240
LVRRELPGVRSQALDYFMFAVRCRHRQRQLVHFAWEHFRPRCKFWGPQDKLRRFKPSSL 300
10 PHPLEGSRKVEEEGSPGDPDHEASTQGRTCGPEHSKGGRVDEGPQPRSVEPDAGPLER 360
SQGDEAGGHGEDRPEPLSPKESKKRKLELSRREQPPTEPGPQSASEVEKIALNLEGALS 420
QGSLRTGTQEVEGGQDPGEASCPCRGWGLRSCCGLPSGSAS 461

15 SEQ ID NO: 9 -- Human OGFr cDNA, spliced version 4

1 TAGAATTCAAG CGGCCGCTGA ATTCTAGCCG AGCATGGACG ACCCCGACTG
51 CGACTCCACC TGGGAGGAGG ACGAGGAGGA TGCGGAGGAC GCGGAGGACG
101 AGGACTGCGA GGACGGCGAG GCCGCCGGCG CGAGGGACGC GGACGCAGGG
151 GACGAGGACG AGGAGTCGGA GGAGCCGCGG GCGGCGCGGC CCAGCTCGTT
201 CCAGTCCAGA ATGACAGGGT CCAGAAACTG GCGAGCCACG AGGGACATGT
251 GTAGGTATCG GCACAACATCC CGGGATCTGG TGGAACGAGA CTGCAATGGG
301 GACACGCCAA ACCTGAGTTT CTACAGAAAT GAGATCCGCT TCCTGCCCAA
351 CGGCTGTTTC ATTGAGGACA TTCTTCAGAA CTGGACGGAC AACTATGACC
401 TCCTTGAGGA CAATCACTCC TACATCCAGT GGCTGTTCC TCTGCGAGAA
451 CCAGGAGTGA ACTGGCATGC CAAGCCCCTC ACGCTCAGGG AGGTCGAGGT
501 GTTTAAAAGC TCCCAGGAGA TCCAGGAGCG GCTTGTCCGG GCCTACGAGC
551 TCATGCTGGG CTTCTACGGG ATCCGGCTGG AGGACCGAGG CACGGGCACG
601 GTGGGCGAG CACAGAACTA CCAGAAGCGC TTCCAGAACC TGAACGGCG
651 CAGCCACAAAC AACCTCCGCA TCACACGCAT CCTCAAGTCG CCGTGTGAGC
701 TGAGCCTCGA GCACCTCCAG GCGCCACTGG TCCGCTTCTT CCTGGAGGAG
751 ACGCTGGTGC GGCGGGAGCT GCCGGGGGTG CGGCAGAGTG CCCTGGACTA

801 CTTCATGTTG GCCGTGCGCT GCCGACACCA GCGCCGCCAG CTGGTGCAGT
 851 TCGCCTGGGA GCACTTCCGG CCCCCTGCA AGTCGTCTG GGGGCCAA
 901 GACAAGCTGC GGAGGTTCAA GCCCAGCTCT CTGCCGCATC CGCTCGAGGG
 951 CTCCAGGAAG GTGGAGGAGG AAGGAAGCCC CGGGGACCCC GACCACGAGG
 5 1001 CCAGCACCCA GGGTCGGACC TGTGGGCCAG AGCATAGCAA GGGTGGGGC
 1051 AGGGTGGACG AGGGGCCCA GCCACGGAGC GTGGAGCCCC AGGATGCGGG
 1101 ACCCCTGGAG AGGAGCCAGG GGGATGAGGC AGGGGGCCAC GGGGAAGATA
 1151 GCCCGGAGCC CTTAAGCCCC AAAGAGAGCA AGAAGAGGAA GCTGGAGCTG
 1201 AGCCGGCGGG ACCAGCCGCC CACAGAGCCA GGCCCTCAGA GTGCCCTCAGA
 10 1251 GGTGGAGAAC ATCGCTCTGA ATTGGAGGG GTGTGCCCTC AGCCAGGGCA
 1301 GCCTCAGGAC GGGGACCCAG GAAGTGGCG GTCAGGACCC TGGGGAGGCA
 1351 GTGCAGCCCT GCCGCCAAC CCTGGGAGCC AGGGTGGCCG ACAAGGTGAG
 1401 GAAGCGGAGG AAGGTGGATG AGGGTGCTGG GGACAGTGCT GCGGTGGCCA
 1451 GTGGTGGTGC CCAGACCTTG GCCCTTGCAG GGTCCCCTGC CCCATCGGGG
 15 1501 CACCCCAAGG CTGGACACAG TGAGAACGGG TTGAGGAGG ACACAGAAGG
 1551 TCGAACGGGG CCCAAAGAAG GTACCCCTGG GAGCCCATCG GAGACCCAG
 1601 GCCCCAGCCC AGCAGGACCT GCAGGGGACG AGCCAGCCGA GAGCCCATCG
 1651 GAGACCCAG GCCCCCGCCC AGCAGGACCT GCAGGGGACG AGCCAGCCGA
 1701 GAGCCCATCG GAGACCCAG GCCTCCGCC GGCAGGACCT GCAGGGGACG
 20 1751 AGCCAGCCGA GACCCCATCG GAGACCCAG GCCCCAGCCC GGCAGGACCT
 1801 ACAAGGGATG AGCCAGCCGA GAGCCCATCG GAGACCCAG GCCCCCGCCC
 1851 GCCAGGACCT GCAGGGGACG AGCCAGCCGA GAGCCCATCG GAGACCCAG
 1901 GCCCCCGCCC GGCAGGACCT GCAGGGGACG AACAGCCGA GAGCCCATCG
 1951 GAGACCCAG GCCCCAGCCC GGCAGGACCT ACAAGGGATG AGCCAGCCAA
 2001 GGCGGGGAG GCAGCAGAGT TGCAAGGACGC AGAGGTGGAG TCTTCTGCCA
 2051 AGTCTGGAA GCCTTAAGGA AAGGAGTGCC CGTCGGCGTC TTGGTCCCTCC
 2101 TGTCCCTGCT GCAGGGCTG GGGCCTCCGG AGCTGCTGCG GACTCCCCTC
 2151 AGGCTCTGCT TCGTGACCCG TGACCCATGA CCCACAGTGC TGGCCTCCTG
 2201 TGGGGCCACT ATAGCAGCCA CCAGAACCG CGAGGCCCTC AGGGAAGCCC
 2251 AAGGCCTGCA GAAGCCTCCT GGCCTGGCTG TGTCTTCCCC ACCCAGCTCT
 30 2301 CCCCTGCGCC CCTGTCTTTG TAAATTGACC CTTCTGGAGT GGGGGCG

SEQ ID NO: 10 -- Human OGFr, from spliced cDNA version 4

MDDPDCDSTWEEDEDAEDAEDEDCEDGEAAGARDADAGDEDEESEEPRAARPSSFQSRM 60
TGSRNWRATRDMCRYRHNPDLVERDCNGDTPNLSFYRNEIRFLPNGCFIEDILQNWTDN 120
5 YDLLEDNHSYIQWLFPIREPVGVNWHAKPLTLREVEVFKSSQEIQERLVRAYELMLGFYGI 180
RLEDRGTGTVGRAQNYQKRQNLNWRSHNNLRITRILKSPCELSLEHFQAPLVRFFLEET 240
LVRRELPGVRQSALDYFMFAVRCRHQRQLVHFAWEHFRPRCKFWGPQDKLRRFKPSSL 300
PHPLEGSRKVEEEGSPGDPHEASTQGRTCGPEHSKGGRVDEGPQPRSVPQDAGPLER 360
SQGDEAGGHGEDRPEPLSPKESKKRKLRLSRRREQPPTEPGPQSASEVEKIALNLEGALS 420
10 QGSLRTGTQEVGQDPGEAVQPCRQPLGARVADKVRKRRKVDEGAGDSAASGGAAQTLA 480
LAGSPAPSCHKAGHSENGVEEDTEGRTGPKEGTPGSPSETPGPSAGPAGDEPAESPSE 540
TPGPRPAGPAGDEPAESPSETPGLRPAGPAGDEPAETPSETPGPSAGPTRDEPAESPSE 600
TPGPRPAGPAGDEPAESPSETPGPRPAGPAGDEPAESPSETPGPSAGPTRDEPAKAGEA 660
AELQDAEVESSAKSGKP

15

SEQ ID NO: 11 -- Human OGFr cDNA, spliced version 7

1 TAGAATTCAAG CGGCCGCTGA ATTCTAGCCG AGCATGGACG ACCCCGACTG
20 51 CCGACTCCACC TGGGAGGAGG ACGAGGAGGA TGCAGGAGGAC GCGGAGGACG
101 101 AGGACTGCGA GGACGGCGAG GCCGCCGGCG CGAGGGACGC GGACGCAGGG
151 151 GACGAGGACG AGGAGTCGGA GGAGCCCGG GCGGCGCGC CCAGCTCGTT
201 201 CCAGTCCAGA ATGACAGGGT CCAGAAACTG GCGAGCCACG AGGGACATGT
251 251 GTAGGTATCG GCACAACTAT CCGGATCTGG TGGAACGAGA CTGCAATGGG
301 301 GACACGCCAA ACCTGAGTTT CTACAGAAAT GAGATCCGCT TCCTGCCAA
351 351 CGGCTGTTTC ATTGAGGACA TTCTTCAGAA CTGGACGGAC AACTATGACC
401 401 TCCTTGAGGA CAATCACTCC TACATCCAGT GGCTGTTCC TCTGCGAGAA
451 451 CCAGGAGTGA ACTGGCATGC CAAGCCCCTC ACGCTCAGGG AGGTCGAGGT
501 501 GTTTAAAAGC TCCCAGGAGA TCCAGGAGCG GCTTGTCCGG GCCTACGAGC
551 551 551 TCATGCTGGG CTTCTACGGG ATCGGCTGG AGGACCGAGG CACGGGCACG
601 601 GTGGGCCGAG CACAGAACTA CCAGAAAGCGC TTCCAGAACCT GAACTGGCG
651 651 CAGCCACAAAC AACCTCCGCA TCACACGCAT CCTCAAGTCG CCGTGTGAGC

701 TGAGCCTCGA GCACTTCCAG GCGCCACTGG TCCGCTTCTT CCTGGAGGAG
751 ACGCTGGTGC GGCGGGAGCT GCCGGGGGTG CGGCAGAGTG CCCTGGACTA
801 CTTCATGTTC GCCGTGCGCT GCCGACACCA GCGCCGCCAG CTGGTGCACT
851 TCGCCTGGGA GCACTTCCGG CCCCGCTGCA AGTCGTCCTG GGGGCCCCAA
5 901 GACAAGCTGC GGAGGTTCAA GCCCAGCTCT CTGCCCCATC CGCTCGAGGG
951 CTCCAGGAAG GTGGAGGAGG AAGGAAGCCC CGGGGACCCC GACCACGAGG
1001 CCAGCACCCA GGGTCGGACC TGTGGGCCAG AGCATAGCAA GGGTGGGGC
1051 AGGGTGGACG AGGGGCCCA GCCACGGAGC GTGGAGCCCG AGGATGCGGG
1101 ACCCCTGGAG AGGAGCCAGG GGGATGAGGC AGGGGGCCAC GGGGAAGATA
10 1151 GCCCGGAGCC CTTAAGCCCC AAAGAGAGCA AGAAGAGGAA GCTGGAGCTG
1201 AGCCGGCGGG AGCAGCCGCC CACAGAGCCA GGCCCTCAGA GTGCCTCAGA
1251 GGTGGAGAAG ATCGCTCTGA ATTTGGAGGG GTGTGCCCTC AGCCAGGGCA
1301 GCCTCAGGAC GGGGACCCAG GAAGTGGCG GTCAGGACCC TGGGGAGGCA
1351 GTGCAGCCCT GCCGCCAACC CCTGGGAGCC AGGGTGGCCG ACAAGGTGAG
1401 GAAGCGGAGG AAGGTGGATG AGGGTGTGG GGACAGTGCT GCGGTGGCCA
1451 GTGGTGGTGC CCAGACCTTG GCCCTTGCAG GGTCCCCTGC CCCATCGGGG
1501 CACCCCAAGG CTGGACACAG TGAGAACCGG GTTGAGGAGG ACACAGAAGG
1551 TCGAACGGGG CCCAAAGAAG GTACCCCTGG GAGCCCATCG GAGACCCAG
1601 GCCCCAGCCC AGCAGGACCT GCAGGGGACG AGCCAGCCGA GAGCCCATCG
20 1651 GAGACCCAG GCCCCCAGCC GGCAGGACCT GCAGGGGACG AGCCAGCCGA
1701 GAGCCCATCG GAGACCCAG GCCCCAGCCC GGCAGGACCT ACAAGGGATG
1751 AGCCAGCCGA GAGCCCATCG GAGACCCAG GCCCCCGCCC GGCAGGACCT
1801 GCAGGGGACG AGCCAGCCGA GAGCCCATCG GAGACCCAG GCCCCCGCCC
1851 GGCAGGACCT GCAGGGGACG AGCCAGCCGA GAGCCCATCG GAGACCCAG
1901 GCCCCAGCCC GGCAGGACCT ACAAGGGATG AGCCAGCCAA GGCGGGGAG
1951 GCAGCAGAGT TGCAGGACGC AGAGGTGGAG TCTTCTGCCA AGTCTGGAA
2001 GCCTTAAGGA AAGGAGTGC CGTCGGCGTC TTGGTCCCTC TGTCCTGCT
2051 GCAGGGGCTG GGGCCTCCGG AGCTGCTGCG GGCTCCCCTC AGGCTCTGCT
2101 TCGTGACCCG TGACCCATGA CCCACAGTGC TGGCCTCCCTG TGGGGCCACT
2151 ATAGCAGCCA CCAGAAGCCG CGAGGCCCTC AGGGAAAGCCC AAGGCCTGCA
2201 GAAGCCTCCCT GGCTGGCTG TGTCTTCCCC ACCCAGCTCT CCCCTGCGCC
2251 CCTGTCTTG TAAATTGACC CTTCTGGAGT GGGGGGCAG

SEQ ID NO: 12, Human OGFr, from spliced cDNA version 7

MDDPDCDSTWEEDDEADAEDAEDEDEDGEAAAGARDADAGDEDEESEEPRAARPSSFQSRM 60
5 TGSRNWRATRDMCRYRHNPDLVERDCNGDTPNLSFYRNEIRFLPNGCFIEDILQNWTDN 120
YDLLEDNHSYIQWLFPLREPGVNWHAKPLTLREVEVFKSSQEIQERLVRAYELMLGFYGI 180
RLEDRGTGTVGRAQNYQKRFQNLNWRSHNNLRITRILKSPCELSLEHFQAPLVRFFLEET 240
LVRRELPGVRQSALDYFMFAVRCRHQRQLVHFAWEHFRPRCKFWGPQDKLRRFKPSSL 300
PHPLEGSRKVEEGSPGDPDHEASTQGRTECGPEHSKGGRVDEGPQPRSVEPDAGPLER 360
10 SQGDEAGGHGEDRPEPLSPKESKKRKLELSRREQPPTEPGPQSASEVEKIALNLEGCALLS 420
QGSLRTGTQEVEGGQDPGEAVQPCRQPLGARVADVKVRKRRKVDEGAGDSAASGGAAQTLA 480
LAGSPAPSGHPKAGHSENGVEEDTEGRTGPKEGTPGSPSETPGPS PAGPAGDEPAESPSE 540
TPGPRPAGPAGDEPAESPSETPGPS PAGPTRDEPAESPSETPGPRPAGPAGDEPAESPSE 600
TPGPRPAGPAGDEPAESPSETPGPS PAGPTRDEPAKAGEAAELQDAEVESSAKSGKP 657
15

SEQ ID NO: 13 - Human OGFr cDNA, spliced version 127

1 TAGAATTCACTGGCCCTGATTCTAGCCGAGCATGGACGACCCGACTG
20 51 CGACTCCACC TGGGAGGAGGACGAGGAGGA TGCGGAGGACGCGGAGGACG
101 AGGACTGCGA GGACGGCGAGGCCGCCCGCGAGGGACGC GGACGCAGGG
151 GACGAGGACG AGGAGTCGGA GGAGCCGCGGCGCCAGCTCGTT
201 CCAGTCCAGA ATGACAGGGTCCAGAACTG GCGAGCCACGAGGGACATGT
251 GTAGGTATCG GCACAACATATCCGGATCTGG TGGAACGAGA CTGCAATGGG
301 GACACGCCAA ACCTGAGTTTCTACAGAAAT GAGATCCGCTTCCTGCCAA
351 CGGCTGTTTC ATTGAGGACA TTCTTCAGAA CTGGACGGACAACTATGACC
401 TCCTTGAGGA CAATCACTCC TACATCCAGT GGCTGTTCC TCTGCGAGAA
451 CCAGGAGTGA ACTGGCATGCAAGCCCCCTCACGCTCAGGGAGTCGAGGT
501 GTTTAAAAGCTCCCAGGAGATCCAGGAGCG GCTTGTCCGG GCCTACGAGC
551 TCATGCTGGG CTTCTACGGG ATCCGGCTGG AGGACCGAGG CACGGCACG
601 GTGGGCCGAG CACAGAACTA CCAGAAGCGCTTCCAGAACCTGAGC
651 CAGCCACAAC AACCTCCGCA TCACACGCAT CCTCAAGTCG CCGTGTGAGC

701 TGAGCCTCGA | GCACTTCCAG GCGCCACTGG TCCGCTTCTT CCTGGAGGAG
751 ACGCTGGTGC | GGCGGGAGCT GCCGGGGGTG CGGCAGAGTG CCCTGGACTA
801 CTTCATGTTC | GCCGTGCGCT GCCGACACCA GCGCCGCCAG CTGGTGCACT
851 TCGCCTGGGA | GCACTTCCGG CCCCGCTGCA AGTCGTCTG GGGGCCCAA
5 901 GACAAGCTGC | GGAGGTTCAA GCCCAGCTCT CTGCCGCATC CGCTCGAGGG
951 CTCCAGGAAG | GTGGAGGAGG AAGGACCTGC AGGGGACGAG CCAGCCGAGA
1001 GCCCATCGGA | GACCCCAGGC CCCAGCCCG CAGGACCTAC AAGGGATGAG
1051 CCAGCCAAGG | CGGGGGAGGC AGAAGCCTGC TGCTGGCTG TGTCTCCCA
1101 CCCAGCTCTC | CCCTGCGCCC CTGTCTTGT TAATCGACCC TTCTGGAGCG
10 1151 GGGGGCGGCG | GGCAGGGCTT GCCTTCTTA GTCTGATGCC AAGCAAGGCC
1201 TTTTCTGAAT AAATTGATTT GACTTCGAA AA

SEQ ID NO: 14 -- Human OGFr, from spliced cDNA version 127

15 MDDPDCDSTWEEDEDAEDAEDEDCEDGEAAGARDADAGDEDEESEEPRAARPSSFQSRM 60
TGSRNWRATRDMCRYRHNYPDLVERDCNGDTPNLSFYRNEIRFLPNGCFIEDILQNWTDN 120
YDLLEDNHSYIQWLFLREPGVNWHAKPLTLREVEFKSSQEIQERLVRAYELMLGFYGI 180
RLEDRGTVGRAQNYQKRFQNLNWRSHNNLRITRILKSPCELSLEHFQAPLVRFFLEET 240
20 LVRRELPGVRQSALDYFMFAVRCRHQRQLVHFAWEHFRPRCKFWGPQDKLRRFKPSSL 300
PHPLEGSRKVEEEGPAGDEPAESPSETPGPSAGPTRDEPAKAGEAEACCLAVSSHPLP 360
CAPVFVNRPFWSGGRAGLAFLSLMPSKAFSE 392